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EXCELSA COFFEE.

By T. B. McClelland.

The recent hurricane has greatly accentuated a need already felt by the coffee planter long before the storm--that is, the need for new coffee plantings. Owing to the widespread damage to the coffee, extensive new plantings must be made if the plantations are to continue on anything like their former scale.

At the time these plantations were made there was no question of varieties. Only a single variety was available to the planter. To-day he may choose any one of more than a dozen different sorts of coffee. Among these, Excelsa coffee has proved of particular promise for planting under certain conditions, and the experiment station wishes to place the information relating to it before the planters.

This variety was discovered about 25 years ago in West Africa. It was soon tested by the Dutch in Java, and presently hundreds of acres there were planted to it. Seeds of Excelsa coffee from Java were planted by the station at Mayaguez in November and December, 1915. These plantings to-day are showing us something of what we may expect of this variety.

The discoverer of Excelsa coffee, Aug. Chevalier, reported that it is adaptable to a dry climate, mentioning it as found in one locality with a 6 months dry season and only 1 to 1.5 meters rainfall in the year.

In the wild state it grows in forests below 500 meters altitude and this natural range is presumably the best suited to it. Dr. Cramer of Java says that while it may be grown at more than 4,000 feet it would hardly pay at that altitude and the growth is much slower.

Excelsa may be grown with or without shade, an important adaptability at the present time with the shade trees so extensively damaged or destroyed. At the station it has grown well both under shade and unshaded. In Java it is said to be grown generally under shade, but a lighter shade is preferred for it than that used for other coffees.

Though Excelsa coffee will, of course, grow better in a rich soil, it does not require such, and will flourish in soils unsuited to the best development of Arabian coffee. The root system is notably strong and vigorous, and from the older trunks large roots may be traced far out from the tree.

Chevalier reported Excelsa coffee in the wild state to be a tree from 8 to 15 meters and even sometimes 20 meters high. Grafted trees at this station have attained a height of about 23 feet in 9 years. The growth is very vigorous and the trees attain so large a size that they must be widely spaced. In one of the station plantings the branches of 13-year-old trees spaced 12 feet apart now meet. A closer permanent spacing than 12 x 12 feet would seem inadvisable. However, where the seed supply is abundant and land scarce, a closer planting may be made and alternate trees removed as the growth warrants. In this way the earlier crops will show a higher acre production, but the planter will likely have difficulty in persuading himself to destroy perfectly good trees when they begin to crowd one another.

It is readily seen that the picking of the crop from trees so tall as Excelsa is not an easy matter when the planting is on a steep slope. Even though most of the trees at the station have been topped at 12 feet, ladders have had to be used and on steep slopes that is difficult. It is quite probable that on steep slopes the trees should be kept at such a height as to make ladders unnecessary in harvesting the crop, even though the lower heading-back of the tree should result in a somewhat reduced production. On more nearly level land where ladders can be used the trees should not be allowed to grow above 12 feet in height. If the tree is allowed to attain this height before being topped, there will have been a loss of irreplaceable lower primary branches. The initial topping should be when the tree is small and still retains the first primary laterals. When four pairs of laterals have developed is a good time to top. Growth will then be forced into the laterals and they will develop into large branches. When they have become strong and well-developed, an upright branch may be allowed to grow from the trunk and carry the growth up to the desired height.

The leaves of Excelsa coffee are of much stiffer, heavier texture than those of the Arabian coffee and are larger, measuring 8 to 12 inches in length and 4 to 6 inches in breadth. They are much less subject to leaf miner injury. Although the leaf miner enters, it makes little headway. For localities where the ravages of this pest are excessive, the planting of Excelsa coffee rather than Arabian is recommended.

The crop begins to ripen in December or January and continues into the following summer, thus ripening in the months when the Arabian coffee is not being picked and when labor is most readily available on the coffee plantations as constituted to-day. This variety is much less liable to loss from over-ripeness than is the Arabian coffee, and in consequence there may be longer interims between collections. The ripening season coincides with the drier weather, which favors the picking of the crop. Since the cherries are quite immature and many of them still small in the hurricane season, the probability of wind damage to the crop is less than in the case of the Arabian coffee, provided, of course, that the tree itself is not broken, blown over, or killed.

The pulp is firmer and less juicy than that of Arabian coffee. It is thinner, however, than that of some other members of the Liberian group to which Excelsa belongs, and the machinery ordinarily used in pulping Arabian coffee may be used for Excelsa.

The cherries on the average are smaller than those of the Porto Rican coffee but there is little difference between the two in bean weight. The loss in weight on removal of parchment is about 26 per cent for Excelsa in contrast to 17 per cent for Porto Rican. While an almud of cherries of Porto Rican coffee is generally considered as the equivalent of 5 pounds of coffee beans after removal of parchment, an almud of Excelsa gives but 4 pounds of cleaned coffee. This makes the picking of Excelsa relatively more costly. The total reduction in weight from cherry to marketable bean in samples prepared at the station was in the ratio of 7.2 to 1. That is, for one pound of coffee as marketed, 7.2 pounds of coffee cherries were picked.

The bean is of a totally different appearance from the Porto Rican and for marketing purposes the two should not be mixed. The silver skin is of a pale brownish color and the bean is straw-colored or yellow. A considerable portion of the silver skin adheres to the beans, giving them a rough and uneven appearance, unless they are rapidly dried by artificial heat. A fragment of the parchment is likely to be held in the deep sutures, which also detracts from the appearance.

The quality of the beverage prepared from Excelsa coffee is good and would be acceptable locally. In marketing, this coffee could not be sold as Porto Rican, to which it is much inferior in appearance, but would be classed presumably as Liberian, to which it is more closely related.

The rate of production of Excelsa coffee in Porto Rico to date is shown in the accompanying table. Each of the four groups contains from 10 to 40 trees, but the production is raised in the table to an acre basis calculated on the area planted and a reduction rate of 5 liters of cherries to 1 pound of coffee after drying and the removal of the parchment. Each group except D, the smallest, has lost some trees. The production is accordingly smaller than had the stand been complete, but this is a normal condition and such as ordinarily might be expected on the plantation. Groups A and B are the oldest, and group A is the largest as well, originally set with 40 trees and now containing 37. In both groups the trees are spaced 12 x 12 feet. In A the trees were topped at 12 feet when a little less than 7 years old, in B the growth has been unchecked. In groups C and D the trees are spaced 10 x 10 feet. At six years the trees in C were topped at 12 feet and those in D at 6 feet, this operation in the latter group entailing some loss of crop. The soil in which these trees are growing is certainly not superior in fertility to that of the average coffee plantation, and some of it would be considered very poor. No fertilizer has been applied to it.

Annual Rate of Production per Acre in Pounds of Coffee, Parchment Removed

Age of trees	Group	Group	Group	Group
	A	B	C	D
Years	Lbs.	Lbs.	Lbs.	Lbs.
5	57	33	-	-
6	275	168	64	41
7	238	187	55	139
8	652	417	209	
9	204	814	211	
10	970	28	348	
11	585	63		
12	946	395		

The table shows that production began at 5 or 6 years from planting the seed, but that no large production was had under 8 years. In group A the average annual production from the 8th to the 12th year was 671 pounds, a very satisfactory yield. In the smaller group B for the same period this was 443 pounds. In group C the production has been less satisfactory, which may be ascribed, at least in part, to late topping and too heavy shading.

In summing up, Excelsa coffee possesses certain advantages and certain disadvantages in comparison with the Arabian coffee grown locally. It is less exacting in its shade requirements and may even be grown without shade. Its adaptability to a dry climate renders it less subject to injury from a protracted dry season. The vigorous root development and robust tree growth even on poor soils indicate this to be a promising variety for planting in many localities less suited to the more exacting Arabian varieties. Its resistance to the leaf miner is an attribute of paramount importance in some sections. The yield is comparatively high and the crop, ripening as it does in the drier months of the year, is much less liable to loss through wind or rain. The cup quality is good.

Against these good points, there are several less favorable characteristics. Excelsa is late in reaching full production. The reduction in weight on curing is high, an almud giving 4 instead of 5 pounds of cleaned coffee. On account of the less attractive appearance and the smaller established demand for coffee of this type, the product would be less readily marketable at a good figure.

